AMENDMENTS TO THE SPECIFICATION:

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/DE 2004/001257 filed on June 17, 2004.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0001] with the following amended paragraph:

[0001] ~~Prior Art~~ **Field of the Invention**

Please replace paragraph [0002] with the following amended paragraph:

[0002] The invention is ~~based on a~~ **directed to an improved** unit for pumping fuel **to an internal combustion engine.** ~~as generically defined by the preamble to the main claim. From German Patent DE 28 35 457 C2, a roller cell pump is already known in which a shaped sliding surface composed of elliptical portions results from two different equations. For various rotor diameters R_2, the shaped sliding surfaces that can be generated from the equations are all mathematically similar with regard to the function of the unit, such as hot gasoline pumping, efficiency, and wear behavior, and are not optimal, and are inconstant at the transitions between the ellipse halves, for eccentricities not equal to one.~~

Please add the following new paragraph after paragraph [0002]:

[0002.2] Description of the Prior Art

Please add the following new paragraph after paragraph [0002.2]:

[0002.4] German Patent DE 28 35 457 C2 discloses a roller cell pump in which a shaped sliding surface composed of elliptical portions results from two different equations. For

various rotor diameters R_2, the shaped sliding surfaces that can be generated from the equations are all mathematically similar with regard to the function of the unit, such as hot gasoline pumping, efficiency, and wear behavior, and are not optimal, and are inconstant at the transitions between the ellipse halves, for eccentricities not equal to one.

Please replace paragraph [0003] with the following amended paragraph:

[0003] ~~Advantages of the Invention~~

SUMMARY AND ADVANTAGES OF THE INVENTION

Please replace paragraph [0004] with the following amended paragraph:

[0004] The **pump** unit of the invention ~~having the definitive characteristics of the main claim~~ has the advantage over the prior art that an improvement in the function ~~of the unit~~ is attained in a simple way because a course of radii of the elliptical portions corresponds at least in portions to one of the equations **disclosed** ~~recited in the main claim~~. By varying the parameters contained in the equations, such as a parameter n and/or an eccentricity s_1, the shaped sliding surface can be adapted optimally in portions to the particular function required in that region of the shaped sliding surface, such as generating an underpressure in an intake region, generating an overpressure in a compression region, providing sealing in a sealing region, or establishing a constant volume in a reversal region.

Please delete paragraph [0005].

Page 2, please replace paragraph [0006] with the following amended paragraph:

[0006] **Advantageous refinements of and improvements to the pumping unit are disclosed.** It is especially advantageous if the radii of the elliptical portion are the same at the

transitions, since in this way the shaped sliding surface has a constant course, and therefore major pressure fluctuations, which in the prior art often cause cavitation and oscillation of the roller bodies, do not occur. The wear of the roller bodies and the roller sliding surface are therefore markedly improved.

Page 2, please replace paragraph [0010] with the following amended paragraph:

[0010] ~~Drawing~~ **BRIEF DESCRIPTION OF THE DRAWINGS**

Please replace paragraph [0011] with the following amended paragraph:

[0011] **Other features and advantages of the invention will become apparent from the description contained herein below, taken with the drawings, in which:** ~~One exemplary embodiment of the invention is shown in simplified form in the drawing and explained in further detail in the ensuing description. Fig. 1 shows a unit for pumping fuel; Fig. 2 shows a unit with a shaped sliding surface according to the invention; and Fig. 3 shows a shaped sliding surface according to the invention.~~

Please add the following new paragraph after paragraph [0011]:

[0011.2] Fig. 1 shows a unit for pumping fuel;

Please add the following new paragraph after paragraph [0011.2]:

[0011.4] Fig. 2 shows a unit with a shaped sliding surface according to the invention; and

Please add the following new paragraph after paragraph [0011.4]:

[0011.6] Fig. 3 shows a shaped sliding surface according to the invention.

Page 3, please replace paragraph [0012] with the following amended paragraph:

[0012] ~~Description of the Preferred Embodiment~~

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please delete paragraph [0013].

Please replace paragraph [0014] with the following amended paragraph:

[0014] **Fig. 1 shows a unit according to the invention for pumping fuel to an internal combustion engine, in which the unit** has a cylindrical housing 1, for instance, with at least one inlet conduit 2 and one outlet conduit 3. The inlet conduit 2 of the unit communicates, for instance via a suction line 6, with a tank 7 in which fuel[[,]] ~~for instance,~~ is stored. The outlet conduit 3 of the unit communicates with an internal combustion engine 9, for instance via a pressure line 8.

Page 4, please replace paragraph [0019] with the following amended paragraph:

[0019] The first end wall 21 is embodied on the inside, toward the rotor 15, of an intake cap 26, which for is instance disk-shaped, and the second end wall 22 is defined on the inside, toward the rotor 15, of a pressure cap 27, also for instance disk-shaped. The annular wall 23 is provided for instance on the inside, toward the rotor 15, of an annular intermediate **ring or** cap 28. The annular wall 23 may for instance be joined integrally in the form of a coating with the intermediate **ring** [[cap]] 28 or it may be embodied as a separate slide ring. A separate slide ring may for example be press-fitted, glued, welded, or screwed into the annular intermediate **ring** [[cap]] 28. The intermediate **ring** [[cap]] 28 is located for instance between the disk-shaped intake cap 26 and the disk-shaped pressure cap [[28]] **27**. However,

the intermediate **ring** [[cap]] 28 may also be joined integrally with the intake cap 26 or the pressure cap 27. The intermediate [[cap]] **ring** 28 with the annular wall 23 is for instance located eccentrically to the rotor 15.

Please replace paragraph [0020] with the following amended paragraph:

[0020] Both the intake cap 26 and the intermediate [[cap]] **ring** 28, like the pressure cap 27 and intermediate [[cap]] **ring** 28, are joined to one another respectively by force locking, for instance by means of a plurality of screws, or by form locking.

Page 7, please replace paragraph [0035] with the following amended paragraph:

[0035] The space bounded by the side flanks 43, the groove bottom 44, and the sealing body 39 of [[one]] **each** guide groove 40 forms a groove chamber 54, which communicates, via the respective associated compensation pocket 51, with the adjacent gap chamber 49 that is the leading one relative to the direction of rotation of the rotor 15. The groove chamber 54, the compensation pocket 51, and the gap chamber 49 form a pump work chamber 50.

Please replace paragraph [0037] with the following amended paragraph:

[0037] The pump chamber inlet 33 is located for instance such that upon the rotation of the rotor 15, each pump work chamber 50 intermittently communicates fluidically with the pump chamber inlet 33 by overlapping, and fluid flows via the inlet conduit 2 and the pump chamber inlet [[22]] **33** into the respective pump work chamber 50.

Page 9, please replace paragraph [0042] with the following amended paragraph:

[0042] In the reversal region 59, the pump work chamber 50 is closed and in this way seals off the pump chamber outlet 34 from the pump chamber inlet 33. In the reversal region 59, the shaped sliding surface 24 is designed such that the volume of the closed pump work chamber 50 remains at least approximately constant, so that unwanted increases in pressure do not occur in the closed pump work chamber 50. A reduction in the volume of the closed pump work chamber 50 would cause compression of the fluid and as a result a pressure increase in the applicable pump work chamber 50. Major increases in pressure in the closed pump work chamber 50 cause excessive oscillation of the sealing bodies 39, since the sealing bodies, because of the high pressure in the closed pump work chamber 50, are initially pressed radially inward, causing leakage into whichever pump work chamber 50 is leading at the time, and because of the pressure drop in the pump work chamber 50 caused by the leakage, they are pressed suddenly back against the shaped sliding surface 24. The impact of the sealing bodies 39 against the shaped sliding surface 24 would cause high wear at the shaped sliding surface 24 and/or at the sealing bodies 39. Because major pressure increases in the closed pump work chamber 50 are avoided, the occurrence of so-called cavitation, which because of the creation of vapor bubbles resulting from a failure to attain the vapor pressure of the fluid, and the abrupt collapse of the vapor bubbles on the shaped sliding surface 24 or on surfaces of the rotor 15 **which** can also cause wear to the shaped sliding surface 24 or the rotor 15, is at least reduced. Since cavitation in roller cell pumps occurs predominantly when the ~~gasoline~~ **fuel** is hot, the function of the unit of the invention is improved in the case of hot gasoline as well.

Page 10, please replace paragraph [0049] with the following amended paragraph:

[0049] The radius of the cylindrical rotor 15 is designated as R_2 in Fig. 3, and the radius of a circle 64, which extends through the wide gap 46 and the narrow gap 45 and which has a center point M', is designated [[R1]] $\underline{\mathbf{R}}_1$. The center point M' is shifted by the eccentricity s_1 from the center point M of the rotor 15 in the direction of an axis formed by the wide gap 46 and the narrow gap 45.

Page 12, please replace paragraph [0056] with the following amended paragraph:

[0056] By varying the eccentricity s_1, the gap 48 in the pump chamber 14 and thus the volume of the pump work chambers 50 is also varied. If the eccentricity s_1 is varied such that the gap 48 increases in size, then the volumetric flow that is pumped by the unit at the same rpm of the rotor 15 increases. The eccentricity s_1 is less than or equal to a radius [[R]] of the sealing bodies 39 and is preferably in the range between 0.9 and 1.4.

Page 14, please add the following <u>new</u> paragraph after paragraph [0061]:

[0062] The foregoing relates to preferred exemplary embodiment of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.